Lecture Notes, Lecture All - Statistics Questions And Answers

Psychology Statistics (University of Nottingham)

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Lecture 1 Questions and answers- the basics

Q. What is the treatment variable and measure known as?

A. Treatment- independant, measure- DV

Q. What are the three kind of treatment variables?

A. Quantitative (noise loudness), qualitative (teaching strategy), classification (sex, age)

Q. What is a nuisance variable and what happens if its uncontrolled?

A. Differences not controlled- confounding variable effecting results

Q. What is a completely randomised design?

A. Subjects are randomly assigned to serve in one of the conditions- between subjects.

Q. What is a randomised block design?

A. Treat subject as a block where subject in all treatment conditions- within subject.

Q. What does it mean to say no treatment effects are present in the population?

A. All the groups are equal and the null hypothesis is accepted.

Q. How do we reject the null hypothesis?

A. Calculating statistics based on the F distribution

Q. Whats the difference between type 1 and type 2 error?

A. Type 1- false positive typ 2- false negative

Lecture 2- how ANOVA works

Q. What are parametric tests and give examples

A. Parametric- focus on the means, assume normally distrib data- ANOVA and t tests

Q. What are non parametric tests and give examples

A. Non Parametric- focus on medians, not normall disturb- Mann- Whitney, Friedman, Kruskal-Wallis,

Q. What does the normal distribution define?

A. Defines population scores with respect to two parameters- pop mean (u) and pop SD (o)

Q. What four tests on SPSS can we use to test for normality?

A. Kolmogorov- Smlmov, Shapiro Wilks, Skew, Lillefors.

Q. How do we do this on SPSS?

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A. descrip- explore- plot- normality plot with test ticked

Q. What can account for some difference in parameters for normal distribution?

A. Experimental error- (measurement and individual differences errors)

Q. What is the difference between systematic source of variability and unsystematic source?

A. Unsystematic- experimental error, systematic- treatment effect

Q. What reflects the population means?

A. The means of the different groups

Q. What does within subject deviation and between subject deviation incoroporate?

A. within- error alone (A25-A) between- error and treatment (A2-T) total= (A25-T)

Q. What equation shows the ratio between between and within group variability?

A. treatment mean differences/ differences among subjects

Q. What does this also equal to?

A. Exp error + treatment effect/ exp error

Q. How do you evaluate the null hypothesis using this?

A. null false- treatment above zero- compare to F distribution

Q. How does ANOVA incorporate this?

A. uses the ratio and believing it follows from the F ratio

Q. What does ANOVA assume? (4 things)

A. interval or ratio measurement, normally distributed, variances pop same, estimates of variance independant.

Lecture 3- ANOVA + analytic comparisons

Q. Why is Analysis of variance needed?

A. For the ANOVA, within and between groups need to be transformed to variances. Analysis of variance compares different sources of variances.

Q. What is variance defined as?

A. sum of square deviations from the mean/ df

Q. What is the equation for between and within mean squares?

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A. between- MSa= SSa divided by dfa within= MSs/a= SSs/a divided by dfs/a

Q. What is the equation for between and within sum of squares?

A. between- total (mean sample- overall mean)2 x no observations in each sample
B. within- total(observed- mean)2 total- (observed- overall mean)2

Q. How is MS different from SS?

A. MS is the SS divided by the df- for between MSa= SSa/dfa for within- MSs/a / dfs/a

Q. What is the df for between and df for within?

A. df for between- groups-1 df for within- observed in each group- group number

Q. What two ways could we solve the problem of not knowing whether significant difference is due to the means or not?

A. priori- planned comparison or posterior- post hoc

Q. How do you do a planned comparison?

A. Work out the Y= difference interested in first- total of coefficient x mean of each group. You assign the coefficient to the different groups just making sure they all add up to 1.
B. Once you've worked out that you work out the SS= n (Y)2 / total coeffic2
C. The work out MS= SS/ df which is always 1
D. Then F ratio- MSA/ within subj and use f ratio numerator and denominator as F ratio

Lecture 4- Post hoc tests

Q. What is a definition for Type 1 error?

A. Probability of rejecting the null when its actually true

Q. Whats the difference between comparison errors and family wise errors?

A. Comparison is the type 1 error for each test, family wise being the total error for all the tests combined

Q. What is the equation to show the relationship?

A. afs= c(apc) so the number of tests x pc = family wise comparison

Q. When can we afford to ignore the increase in family wise comparison?

A. Can afford in planned comparison not in post hoc tests.

Q. What are three examples of post hoc tests?

A. t tests, scheffe, tukey HSD.

Q. Whats the difference between scheffe and planned comparison?

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A. Same process different critical value used- (number of treatment levels -1) x critical value for overall analysis of variance.

Q. How does Tukey HSD post hoc test work?

A. Finds value for smallest significant difference between two means

Q. What is the critical value in this scenario?

A. q (value found in studentized range table) x square root of MS error/ n

Q. When can the Tukey HSD test be used?

A. Between groups ANOVA equal sized cells

Q. How is t test modified for post hoc tests and what can it also be called?

A. Bonferroni correction- t= x1-x2/ square root 2MSerror/ n

Q. How is critical value found?

A. p=0.05/c- no of comparisons

Q. Why are post hoc tests described as conservative?

A. Decrease type 1 error by greatly increasing type 2 error.

Q. What are 4 assumptions of the F ratio?

A. Numerator and denominator indépendant, homog variance, normality, random sampling

Q. What is homogeneity of variance?

A. Variance in each population is equal

Q. Which homogeneity of variance tests for between groups and which for within? 3 for between 1 within.

A. Bartlett, Cochrans C, Hartleys F max. Within- Box's M.

Q. What hand calculation can you use for homogeneity of variance?

A. largest variance/ smallest variance needs to be smaller than 4.

Q. What does Skew, Lilliefors, Shapriro- Wilks do?

A. Tests of normality- compare distribution to theoretically driven normal distribution

Q. What are these tests sensitive of?

A. Departures from normality when large samples are used.

Q. What do we assume when examining the skew?

A. That the distributions of the population are normal and the skew of normal distribution is equal to zero (deviates from normal)/

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Q. How do we test the skew with z score?

A. skew-0/ SEskew SEskew=sqroot6/n (number of sale cases)

Q. How do we meet the normality and homog assumptions?

A. Through data tranformations- maths applied to data before ANOVA

Q. When will they not work?

A. Variance and distributions are heterogenous or just one is

Q. What do transformations reduce?

A. Type 2 error

Q. What does solving homogeneity problems also solve?

A. Normality.

Q. What to do when it fails?

A. Advise caution but carry on- important if smaller than o.o1 bigger than o.1- dont know what error is being made

Q. How do we do it on SPSS?

A. transform- compute variable, name target, bring over specific variable, execute- becomes a separate column then analyse it- if it doesn't work more transformation needed

Lecture 5- power and effect size

Q. What is statistical power?

A. Probability of detecting a real effect- 1-B- not making a type 2 error

Q. What does power depend on?

A. Alpha level, sample and effect size

Q. What is effect size?

A. Separation of means relevant to variance and association between IV and DV

Q. What happens when an effect size is too big or too small?

A. Too big- too expensive to study, too small- effect may be missed/

Q. What happens to the power as the separate between the means increase?

A. It increases too.

Q. What happens when the variability of the means increase?

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A. Power decreases.

Q. What does eta squared measure?

A. Measure of association- how much variance actually due to effect

Q. What is the equation?

A. SS treatment/ SS total

Q. What is partial eta squared and what is the equation?

A. SStreatment/ SS treatment + SS error— how much error and variance attributed to fact.

Q. What is the equation for R squared and what does it show?

A. How much variance attributed to the model- SS model/ SS total

Q. What is the equation for omega squared and what does it show?

A. (p-1)(f-1)/ (p-1)(f-1)+ np amount DV account for by IV

Q. What is the measure of difference- d?

A. x1-x2/ sq root MS error- shows difference between two groups

Q. Measure of difference-f?

A. square rooted- w2/1-w2 difference between 3 or more levels of IV

Q. What does GPower do?

A. Computer program calculates sample size required for different effect sizes and specific levels of power

Q. How can you tell what effect size is being aimed for?

A. basis of previous research- meta- analysis, theoretical importance- decide which effect size is required

Q. What tests should we use to calculate f based on previous research?

A. omega squared to find out w for f test- gives size then use gp power to know what particpant number to use by giving f value.

Lecture 6- Factorial designs

Q. What is a factorial design?

A. A design measuring the effect of multiple IV's on a single DV

Q. What three things are important when creating a name for your experimental design?

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A. The number of IV's, the number of levels in each and the kind of independent variables used (between or within subjects).

Q. What is a 2x3 design?

A. 2 levels of first IV 3 levels of second IV

Q. What is the design called when one IV is within and one IV is between?

A. Mixed or split plot design.

Q. What is the design called which has IV1 between group two levels, IV2 between group two levels and IV3 repeated measures 3 levels?

A. A threeway (2x2x3) mixed design

Q. What F ratio is calculated for a 2x2 between groups design?

A. Main effect of first variable, main effect of second variable and interaction effect between the two variables.

Q. What steps do we have to take to analyse the two way between groups design (similar to the one way ANOVA)?

A. State the null, partition variability, calculate MS and calculate F ratio.

Q. What are the four steps needed to undertaken a 2 way anova?

A. State the null (main effects and interaction), partition the variance (equations for each of the 3 effects), calculate MS (for three effects), calculate F ratio (for each of the three effects)

Q. What is the error term?

A. The error term is the SSw within subject for both variables that will be divided in the interaction effect to find out the F ratio. (Also seen as MS S/AB)

Q. So what is the difference between one way and two way ANOVA?

A. One way you figure out the SST by adding the SSW and SSB once, then dividing each of these by the df and then dividing them together to find F ratio. For two way, SST is found by adding SSB of one, SSB of other, error term- SSA for both and SSAB interaction. You divide the two main effects and interaction by the error term to find three f ratios for two main effects and one interaction.

Q. What do main effects mean for each variable and the interaction effect mean?

A. Main effect means independently each variable significantly effected the group, the interaction shows that one of the effects influences the other or vs.

Q. How do you write a main effect in SPSS style?

A. F(2 df's) F, MSe (error column mean squares), p<.001 (last column).

Q. What do you state in regards to each main effect?

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A. You state the F, df, MSe and p for each of the levels to show if each level had a significant effect in separate paragraphs.

Lecture 7- Within subjects ANOVA

Q. What is the main advantage of within subject?

A. Controls for individual differences.

Q. What are practice effects?

A. Improve from practice or get bored and score lower due to increased practice from one participant.

Q. What is the differential carry over effect?

A. Single score first level may influence score at second level

Q. How would you calculate within ANOVA?

A. SSw (error residual AS-A-S-T and subject variability - S-T) and SSb /df for MS then divide each of the two by the MS residual error calculated to find the F ratio.

Q. What is the problem with finding a general significant main effect and how can we solve this?

A. Don't know where the different lies- do planned or unplanned (posthoc) comparisons

Q. When is there a problem finding a significant main effect?

A. When there is a hidden treatment interaction, when specific predictions are made about performance

Q. What two ways can we partition the variability of a two way within ANOVA?

A. Have error general to both groups (although may be too general), make error for each of the groups of interest

Q. Whats the difference between one way and two way between ANOVA?

A. Two way is two SSw no interest in SSb (between treatments) and there is an interaction between the two variables, once divided by separate df's, each is divided by different residual errors (unlike one way where MSB and MSw is divided by the same residual error) and interaction is divided by interaction of two variables and subject variability

Q. What other assumption does within subjects ANOVA make that between doesnt?

A. Sphericity- homogeneity of different treatment, you don't need to test for this if the IV only has two levels

Q. What is the sphericity test called that is needed for within subject ANOVAs?

A. Mauchley's test

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Q. What does it mean if it is signficiant and how could that increase type 1 error?

A. Cannot assume homogeneity of variance, increase rate of type 1 errors- amount of variance in each treatment group is not equal so variance may suggest false positive when actually just because its not equal in each condition

Q. What can SPSS do to solve the problem?

A. Alternative tests- adjust DFs,

Lecture 8- Mixed ANOVA

Q. How do you conduct a mixed ANOVA?

A. Do a usual one way between and within (using main treatment effect as F ratio for within) and divide interaction by within residual error for interaction effect F ratio.

Q. What three tests as necessary for a mixed ANOVA?

A. Within- Mauchly, between- Levene, overall- Box M (homogeneity of variance)

Lecture 9- ANCOVA

Q. What is a covariate?

A. A variable which may act as confounding eg mood which may effect the results.

Q. What does a ANCOVA do?

A. It reduces experimental error by measuring the covariate and adjusting treatment effects around it

Q. How is partitioning of variability different for ANCOVA compared to ANOVA?

A. ANOVA analyses effect and error while ANCOVA analyses effect, error and covariate.

Q. What do we have available when covariate scores are available?

A. Differences between treatments already there before the experiment.

Q. How does ANCOVA use linear regression?

A. Uses it to estimate the size of treatment effects with the covariate.

Q. How is error variability different in ANCOVA compared to ANOVA in terms of sum of squares and residual sum of squares?

A. ANOVA uses sum of squares which shows how much each person differes from the group mean, while residual sum of squares in ANCOVA is who much each person deviates from the regression line, which is smaller than sum of squares.

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Q. What two assumptions are specific to ANCOVA?

A. assumption of linear regression and homogeneity of regression coefficients.

Q. What is the assumption of linear regression?

A. It means that linear regression is useless if the true regression is curvilinear, deviations from regression line have normal distributions with means of zero and equal scatter (homoscedasticity)

Q. What is the regression coefficient?

A. Slope of the regression line.

Q. What should we assume about the regression coefficients?

A. Each group should be the same.

Q. What did Glass et al state?

A. That it doesn't matter if the regression coefficients are the same or not if they are significantly different.

Q. What does looking at the interaction between the covariate and IV show?

A. If the regression coefficient should be the same for each group or not.

Q What would ancova show in a scenario where there vocabulary levels are tested against crossword cues? What other features may an ancova look at?

A. Amount of experience through age and vocabulary, by using ancova to find a signficant effect we can remove these variables by organising the groups controlling this to further identify the true effect we were looking for.

Q. What kind of test is tukey?

A. A post hoc test

Q. What kind of variables could ANCOVA show when looking at ability on a test?

A. Prior maths or english ability related to the ability tested in the test.

Lecture 10- MANOVA

Q. What is MANOVA?

A. ANOVA style on separate DV's at the same time.

Q. Why do we use it?

A. Maximises the difference between different groups by creating a new DV to see if different groups vary by the amount of DV's between them.

Q. What kind of combination is the new DV?

A. Linear.

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Q. What advantages does MANOVA have that ANOVA doesnt?

A. We don't increase type 1 error as multiple comparisons aren't made (only 1 DV used), easier to see what changes due to treatment group, more powerful than ANOVA'S shows other effects that it doesn't.

Q. What are the four assumptions of MANOVA?

A. Multivariate normality (all linear DV combinations are normal), homogeneity of variance Box's M with p<.001, linearity (linear relationship between all DV's), Multicollinearity and Singularity (relationship between variables is high and a variable is a combination of two or more others.)

Q. What is an example of MANOVA?

A. Multiple DV's eg reading comprehension, communication skills, reading accuracy and IV gender and season of birth.

Q. What is the statistic of choice for most researchers which should be reported?

A. Wilk's Lambda.

Q. What should we do if there is a significant univariate effect?

A. Conduct post hoc tests.

Q. What is discriminant factor analysis?

A. It finds a set of variables that predicts group membership.

Q. When is it used?

A. When groups are already known and the researcher is trying to find out the differences between the groups.

Q. How is it related to MANOVA?

A. It is the reverse, MANOVA creates groups by showing differences in dependant variables created while DFA explains how the groups are different.

Q. What is the basic DFA principle in regards to how the subject groups are divided?

A. Divided on the basis of linear combinations of the classifying variables.

Q. How do you find out the maximum number of functions that can be calculated?

A. The number of IV df or the number of levels the grouping variable has minus one.

Q. Give an example of DFA.

A. Do specific DV's eg reading ability and maths ability predict an IV e.g. who is summer born or not.

Q. What do you look at to see if the groups are separated in SPSS?

A. Wilks Lambda.

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Q. What does the standard coefficient (standardised canonical discrimination function coefficient) show?

A. The contribution of each variable to its function.

Q. What does the structure matrix show?

A. How much each predictor variable correlates with the function.

Q. What does the classification results show?

A. How successful the predictions are.

Term 2

Lecture 1- Ethics

Q. What is the difference between deontological ethics and consequentialist ethics?

A. Deontological ethics- something right if consistent with duties of agent and rights of those affected by the actions. Consequentialist- right if the positive and negative outcomes are weighed.

Q. Who are two people related to these ethics forms?

A. Kant- Deontological, Bentham- Consequentialist.

Q. What does the ethical BPS code require concerning research involving health participants?

A. Respect for autonomy and dignity of participants- avoid harm to them, debriefing and informed consent must be done.

Q. What are the 3 R's that Russel and Burch stated where important regarding principles of human experimentation.

A. Refinement- reduction in inhumane procedures, Reduction- in the number of animals used, Replacement- of highly sentient animals whenever possible.

Q. Which animals are regulated by the Animal Scientific procedures?

A. All vertebrates and octopus.

Q. What are examples of bad data collection, handling and publication?

A. Falsifying data, not showing contradictory research, overlooking others flawed data, publishing same data in more than one report, witholding results.

Q. What must you do in terms of data collection and treatment?

A. You must carefully document each stage.

Q. What two things does authorship imply?

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A. Contribution to planning, evaluation and execution, approval of final version and contribution to manuscript.

Q. What is a conflict of interest in terms of two different considerations?

A. Financial or personal considerations have potential to compromise scientific conduct.

Q. What is a recommendation adopted by sync concerning industry collaboration?

A. You need to declare your relevant links to industry when publishing research.

Q. What is the problem with research being funded by public relations?

A. Knowledge isn't easily accessible for lay personas so there is misunderstanding.

Lecture 2- Threats to validity

Q. What is internal validity?

A. Extent to which the results obtained are a function of variables that were systematically manipulated- IV changes due to DV variation.

Q. What does high internal validity mean?

A. High causality, little other variables effecting results.

Q. What are history and maturation effects?

A. History- events during the expriment that aren't part of it, maturation- biological processes simply due to passing of time eg fatigue or hunger.

Q. What is mortality and how can it be solved?

A. Loss of individuals due to non random reasons- provide inconvenience allowance.

Q. What is instrumentation decay and how can it be solved?

A. Measuring devices change over time (experimenter becomes more bored or equipment less acccurate), randomisation of condition to time and train staff.

Q. What is regression to the mean and what is its problem?

A. Going back to mean after extreme behaviour- people selected for treatment because of extreme score on pretest.

Q. What three things effect equalising groups?

A. Diffusion of treatment effects, compensatory rivalry and equalisation.

Q. What effects separating groups?

A. Resentful demoralisation.

Q. What is diffusion of treatment effects and how can it be solved?

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A. If control group learns about manipulation, don't debrief until all groups finished.

Q. What is compensatory rivalry and what is the John Henry effect?

A. When participants in different groups start competing, this effect is when someone in control worked harder in the mines because they knew they were in disadvantage group.

Q. What is compensatory equalisation?

A. When the experimenter makes it easier for the control group.

Q. What is resentful demoralisation?

A. Control group don't try as hard because they know they are in the control group.

Q. What is external validity?

A. The ability to generalise results in different situations.

Q. What is the difference between population and ecological validity?

A. Population depends on population ecology generalises to different contexts.

Q. What are the four threats to external validity?

A. Reactive effects of testing, reactive effects of experimental setting, selection-treatment interaction, multiple-treatment interference.

Q. What is reactive effects to testing?

A. When a pretest effects the participants sensitivity to treatment.

Q. What are reactive effects of experimental arrangements?

A. These occur when study conditions can't be replicated in a non experimental situation.

Q. What are the four kinds of effects these describe?

A. Rosenthal effect- performance increases due to high expectation. Novelty effects- new technology increases performance. Hawthorn effect- increased attention increases performance. Experimenter effect.

Q. Whats the selection-treatment interaction?

A. Subjects characteristics effects performance e.g. experience.

Q. What is multiple treatment interference?

A. The effect of previous treatments effect subsequent one.

Q. How can you improve external validity?

A. Replicate study with different sample or in a different setting or just at a different time.

Q. What are the two threats to statistical validity?

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A. Type 1 and Type 2 errors.

Q. How do you calculate the average number of Type 1 errors?

A. a x number of tests

Q. What is the possible cause of a type 1 error?

A. Fishing.

Q. What are the possible causes of a type 2 error?

A. Power, reliability of measures, treatments, random irrelevance, random heterogeneity of respondents.

Lecture 3

Q. What did Feynman say the key to science was?

A. Making a new law by guessing it, see what the consequences of it would be, then compare lab results.

Q. What is an experiment, experimental design and a true experiment?

A. Experiment- manipulating variable of interest and measuring its effect with the aim of establishing causality. Experimental design- data collection protocol. True experiment- full control of experimenter of treatment schedule and allocation (random allocation of participants to treatment).

Q. What is the purpose of randomly allocating participants to different conditions?

A. To remove nuisance variables.

Q. What is a quasi experiment?

A. No full control how participants are allocated (not random) so increases risk of groups being different in other ways (lacks internal validity).

Q. What is the nomenclature for one group pre-post quasi design and what does it mean?

A. X(treatment not randomly assigned) O (observation/measurement) X= XOX

Q. What is the nomenclature for non equivalent control group design?

A. OXO
……
O O

Q. What is nomenclature for interrupted time series quasi design?

A. OOOOOOOOOOXOOOOOOOO
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Q. What are the three approaches to controlling nuisance variables?

A. Blocking, Matching and Couterbalancing.

Q. What is blocking?

A. Experiment arranged in block with nuisance variable constant (eg se) while IV varies in each group. Participants randomly located to each IV level. Blocking separates nuisance from IV.

…….SPSS……

Q. What is matching?

A. Each group matched with someone with same individual differences.

Q. What is counterbalancing?
A. Balancing confounding effects at different IV levels.

Q. What is an example of counterbalancing?

A. One half of subjects tete in condition A than B than other half tested B than A.

Lecture 4- Correlation and multiple regression

Q. What is the difference between correlation and regression?

A. Regression predicts Y from X while correlation measures the strength of their relationship.

Q. How do you plot the data on a scatter plot?

A. Each plot is a participant, a regression line, IV (predictor) on bottom x DV (criterion) on Y axis.

Q. What does the scatter plot value mean relating to the regression line?

A. From -1 to +1 how much they cluster around the regression line.

Q. What are the 5 measures of association?

A. Pearson, Spearmans Rho, Kendalls Tau, phi, point biserial.

Q. When should you use Pearson's test?

A. When both variables are interval or ratio.

Q. When should you use Spearmans Rho?

A. When both variables are ordinal (rank).

Q. When should you use Kendalls Tau?

A. When both are ordinal as in opinions not structured ranking.

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Q. When should you use phi?

A. When both are true dichotonomy.

Q. When should you use point biserial?

A. When one is true dichotomy and the other is ratio or interval.

Q. What do the size of the circles and overlapping circles show on a Venn Diagram?

A. Size is how much variance, overlap is where they are correlated.

Q. What is a partial correlation?

A. What the relationship is between two variables when the other variables are removed.

Q. What is multiple regression for?

A. Learn about relationship between several IV's and one DV.

Q. What can we say are the stages of multiple linear regression?

A. Find out the R line equation= multiple correlation coefficient, then R2- Coefficient of determination, then MS from the SSm/SSt by /df (how many variables) and df (observation-parameters) then divide them together MSm/MSr for F ratio- larger the better.

Q. What is a simultaneous (standard) multiple regression?

A. No a priori model, enters all IV's at once.

Q. What is a stepwise multiple regression?

A. No a priori model, computer chooses a posterior model (best IV subset)

Q. What is a hierarchal/sequential multiple regression?

A. A priori sequence entry, theoretically sound.

Q. What are the six factors that effect correlation?

A. outliers & influential points, homo/hetero-scedasticity, singularity & multi-collinearity, number of cases vs number of predictors, range, distribution.

Q. What value counts as an outlier?

A. 1 or greater (Cook).

Q. What is the difference between homo and heteroscedasticity?

A. Hetero- non linear or one variable skewed, homo- uniform dispersion by regression line.

Q. What is the difference between singularity and multicolineraity?

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A. Singularity is when one variable is the combination of many others (IQ- memory + spatial), multicollinearity when variables are highly correlated.

Q. What are the problems of this and how do we solve it?

A. Don't want to measure the same thing twice, remove some IV's before hand see how highly they correlate with each other

Q. What is the effect of number of cases and predictors?

A. If number of cases is too small compared to predictors then results are meaningless.

Q. What is the effect of distribution and range?

A. If the range is small then power is districted, distribution of variables may look odd.

Q. What is the difference between partial, multiple and canonical correlations?

A. Multiple- relationship between IV and DVs, partial- relationship two variables one effect removed, canonical- common between two sets.

Q. What is a multiple regression compared to correlation?

A. Regression predicts IV from DV not just strength of relationship.

Lecture 4- Questionnaire design

Q. Whats the difference between open and closed questions?

A. Open- more qualitative less quantitate.

Q. Whats the problem with unclear leading questions?

A. Directing them to answer you want and can be misunderstood.

Q. What are examples of different response formats?

A. Numerical scales, behaviour frequency scales, dichotomy scales.

Q. Whats the equation for observed score?

A. Observed score= true score + error

Q. What is reliability?

A. How much items relate to the true score.

Q. What four internal reliability ways are there?

A. Split half, parallel forms, cronbachs alpha, KR-20.

Q. What is split half reliability?

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A. Correlate the scores of two half on the test.

Q. What is parallel forms?

A. Randomly divide large pool of items into separate tests, two tests same participant, calculate correlation .

Q. What is a problem of this?

A. Hard to generate large number of items needed.

Q. What is Cronbachs Alpha?

A. Average of all possible split half estimates- up to +1 good if its + .7.

Q. What is Kuder Richardson Formula?

A. KR 20- for dichotomous good if +.7.

Q. What it test-retest reliability and what is it good to show?

A. External reliability- same study different points of time.

Q. Whats the difference between inter and intra reliability?

A. Inter- extent to which two or more raters obtain same result. Intra- same rater more than one occasion.

Q. What is the difference between Cohen and Fleiss' Kappa and which form is it used for?

A. Inter- Cohen values up to +1 for when there are 2 raters, larger the better. Fleiss- works for any number of raters.

Q. Whats the difference between face and faith validity?

A. Belief with no data to back up compared to something that looks like what you want it to measure.

Q. What is content validity?

A. How much a measure reflects everything it is trying to reflect.

Q. What is convergent validity?

A. That the measures show associations with measures its related to.

Q. What is discriminant validity?

A. Not related to things it shouldn't be related to.

Q. What is predictive validity?

A. Assessing whether a measure can predict future behaviour.

Lecture 5-EFA

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Q. What is the latent variable (factor)?

A. Not directly measured, measured different aspects of it.

Q. What is EFA?

A. Understanding different variable structure sets.

Q. What are the four main stages of this?

A. Pre-analysis checks, Extraction, Rotation and Naming, reliability and validity

Q. What are factors made up of?

A. Linear combination of variables.

Q. What does the component matrix show?

A. How much of the old variable is in the new one.

Q. What is the eigen value?

A. Value of each factor in the scree plot

Q. What is the difference between Kaiser, Scree and parallel analysis?

A. Kaiser- eigen minus 1, scree- point of inflection, parallel- compare with randomly made ones

Q. Why do we rotate the axis when we have plot the graph of two factors?

A. So that less cross loading occurs so we can interpret the scores more easily.

Q. What do you do in preanalysis checks?

A. Generate hypothesis select variables, use Phi if dichotomous otherwise use LIkert, remove items correlating with social desirability, make sure sample size is right , avoid singularity using bartlett

Q. What is communality?

A. How much variance extracted by factors

Q. What tests are done in terms of reliability and validity?

A. split half, KR 20, Cronbach alpha for external- test retest.

Q. What is the basic factor model?

A. Common factors and unique- smaller factors which combine to form common factor.

Q. What are the good things and problems with EFA?

A. No easy way to test solution, lots of rotation can account for same variance, creates order out of chaos.

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